COMPACT [SMOKING] OVEN.

BACKGROUND OF THE INVENTION.

The present invention relates to a compact cooking and/or smoking oven. For using oven as smoking embodiment under tray for fat collection install container for accommodating wooden chips. Smoking ovens are known in the art. The known smoking ovens are formed as industrial installations which have great sizes, are provided with powerful and voluminous mechanism and parts for smoking a significant quantity of food product, and are very expensive. It is desirable to provide a compact smoking oven which can be used in small fast food groceries or households by individual users and which do not require special skills for cooking or smoking food products.

SUMMARY OF THE INVENTION

Accordingly, it is an object of the present invention to provide a compact cooking and/or smoking oven which can be used in households by an individual user or small fast food groceries, and does not require any special skills for cooking or smoking food products.

In keeping with these objects and with others which will become apparent thereinafter, one feature of the present invention resides, briefly stated, in a compact [smoking] oven which has a[box-shaped] housing having a peripheral wall composed of two wall portions spaced from one another and including an inner wall portion provided with a plurality of throughgoing openings, at least one heating element for cooking a food product; rotatable food product supporting means; a tray for fat collection. For using oven as smoking embodiment under tray for fat collection is mounted a container for accommodating wooden chips and having at least one wall provided with a plurality of openings, means for heating the container so that when the container is heated and wooden chips inside the container are heated a smoke is produced which exits the container through the openings in the container, then enters a space inside the peripheral wall and exits the space though the openings of the inner wall portion into an interior of the housing, and [means for holder]a food product to be smoked by the smoke.

When the cooking and /or smoking oven is designed in accordance with a the present invention it is compact, has a simple construction, is easy to operate, and can be used in small fast food groceries or in households by an individual user who does not have any special skills for cooking or smoking. The novel features which are considered as characteristic for the invention are set forth in particular in the appended claims.

The invention itself, however, both as to its construction and its method of operation, together with additional objects and advantages thereof, will be best understood from the following description of specific embodiments when read in connection with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS.

FIG. 1 is a front sectional view of a compact cooking and smoking oven in accordance with the present invention;

FIG. 2 is a sectioned side view of the cooking and smoking oven of FIG. 1;

FIG. 3 is a sectioned front view of the oven in accordance with another embodiment of the present invention;

FIG. 4 is a perspective view of the cooking and smoking oven in accordance with a further embodiment of the present invention;

FIG. 5 is a view from below of an upper wall of a housing of the cooking and smoking oven of FIG. 4;

FIG. 6. is a perspective view of a cooking and smoking oven in accordance with still a further embodiment of the present invention;

FIG. 7 is a side view of the cooking and smoking oven of FIG. 6;

FIGS. 8A and 8B are section front view and a section side view of another embodiment of the cooking and smoking oven;

FIGS. 9 and 10 are a side view and a view from below of a flame distributing element with a metal plate of the cooking and smoking oven of FIG. 8;

FIGS. 11A- 11B are views showing a section side view and a section front view of a further embodiment of the inventive cooking and smoking oven;

FIGS. 12A- 12C are views showing a plan view of a cooking and smoking oven a horizontal rod for supporting food products, and an end view of the rod, and a motor used for turning the rod;

FIGS. 13A-13B are view showing a cooking and smoking oven with a plurality of rods mounted on two discs and with a [drill] grill, correspondingly;

FIGS. 14A-14C are views showing a food product supporting unit with discs and a plurality of [fronts] rods on a perspective view, a view of one of the food product supporting unit, and an end view of a fragment of one disc;

FIGS. 15A and15B show a flywheel separately from the rod;

FIG. 16 is a view showing a further modification of food product supporting means formed as a foldable unfoldable [grade] grate;

FIGS. 17A-17E are plan view, front view, a side view, a fragment of the plan view and a perspective view of a container for accommodating wood chips;

FIGS. 18A-18C are a plan view, a side view and a section [or] of a tray with a louver for food defrosting of the inventive cooking and smoking oven;

FIGS. 19-22B are views of the cooking and smoking oven, showing different embodiments of air flow for door sealing;

FIGS. 23 – 24 are section front view of the cooking embodiment oven with a grate.

DESCRIPTION OF THE PREFERRED EMBODIMENTS.

A cooking and smoking oven shown in FIGS. 1 and 2 has a housing with a peripheral wall 1, a top wall 2 and a bottom wall 3. The peripheral wall 1 is formed as a double wall and has an outer wall portion 1' and an inner wall portion 1" which is provided with a plurality of perforations 4. For using compact oven as smoking embodiment oven further has a container 5 for accommodating wooden chips. The container 5 has an upper wall 6 which is also provided with a plurality of perforations. The lower wall of the container [6] 5 is inserted into an inner space of a housing 8 of heating means. The heating means also include a heating element 9 formed for example as an electrical heating element connectable with a source of electric current (not shown). A lower grill 10 is located on a support 11 and in turn supports a tray for fat collection and for heat distribution, and a louver 13 for food defrosting is arranged on the tray 12.

The cooking and smoking oven further has a food product supporting means which is formed as a rotatable disc 14 provided with a plurality of hooks. The disc is connected with a shaft which is rotated by a motor 15 is accommodated in an upper control panel compartment 16 which is separated from the interior of the housing by the upper wall 2. Fans 17 are accommodated in the control panel compartment 16 and are rotatable by electric motors 18.

The interior of the housing is closeable and openable by a door 19 which has a double wall and an inner space 20 between two wall portions of the double wall and an exit opening 21.

The cooking and smoking oven in accordance with the present invention as shown in FIGS. 1 and 2 operates in the following manner:

A food product to be cooked or smoked is introduced into the interior of the housing and is suspended on the hooks of the rotatable support 14. For using oven as smoking embodiment, wood chips are introduced into the interior of the container 5 and the container is placed through the upper opening of the heater housing 8 so that the lower closed wall of the container 5 is located at a distance above the electrical heating element 9 of the heater. Electric current is supplied to the electrical heating element, the electrical heating element heats the air inside the heater housing 8, the heater air heats the bottom wall and the peripheral wall of the container 5, wooden chips inside of the container are heated and produce smoke which exits the container 5 through the openings 6. The smoke is deflected toward the openings of the inner wall portion of the peripheral wall of the housing into the inner space between the inner wall portion 1" and the outer wall portion 1', then the smoke passes through the openings 4 of the inner wall portion 1" and enters the interior of the housing so as to smoke the food product suspended on the support 14. At the same time, the fans 17 are rotated by the motors 18, cool the air and cause flow of air over the upper wall 2 of the housing so as to [heat] cool the upper wall and also into the interior space 20 or the double wall 19 so as to cool the double wall and to provide [gas] air tightness of the interior of the housing. Fat from the food product is collected in the tray.

In the embodiment of FIG. 3, the food product supporting means include two discs 14' and 14" provided with a plurality of hooks and rotatable independently from one another.

In the embodiment of FIGS. 4 and 5, the food product supporting means include four discs 24 provided with a plurality of hooks and the grouped so that two discs 24 are located in one compartment of the housing while two other discs 24 are located in another compartment of the housing separated from the first mentioned compartment by a partition 25. The housing has two doors 26 which provide access to a corresponding compartment.

In the embodiment shown in FIGS. 6 and 7, the food product supporting means include a plurality of rods 26 provided with hooks 27 and connected with a door 28. The container for wood chips 29, the heater 30 as well as the tray 31 are also connected with the door 28. After smoking the door is displaces outwardly of the housing, and the food product supporting means 26, 27 are also located outside of the housing so as to remove the cooked or smoked product and to put a new [smoked] food product on the hooks.

In the embodiment of FIGS. 8A-8B, a heater is formed as a gas heater 32, connected with a source of gas and having one outer opening at its right end in FIG. 4 or a plurality of openings distributed over the pipe 23. A heat accumulating element 34 in FIGS. 9-10 formed for example as a metal plate is located above the flame and separated from the latter by a flame distributing element 35 which is formed for example as a concave sheet provided with a plurality of perforations. The combination of the elements 34, 35 provides for a uniform distribution of the heat into the interior of the oven [to the container 5 which accommodates the wooden chips.]

In the embodiment of FIG[S]. 11A, the food product supporting means in addition to the rotatable disc 14 provided with a plurality of hooks also has a plurality of supports 22 for inserting horizontal rods 36, which is used for inserting a grates 45.

In the embodiment of FIG. 11B, the food product supporting means include a plurality of grate 45 rotatable by rod 36 between a supports 22 and 37.

As can be seen from FIGS. 12A-12C. the rod 36[A]can be tuned around its axis by a motor[37] 15 and support 37,which has a slot with a hole, and support 22.

In the embodiment shown in FIGS. 13A-13B the food product supporting means include two discs 41 and 42 which [are] is fixedly connected with the axial rod rotatable by not shown electric motors and a plurality of rods [43] 56 mounted on the discs spaced from one another in a circumferential direction. As can be seen from FIG. 14A-14C, one end of each rod is inserted through the slot of the disc 41 and locked there by turntable flap57, while the other end of the same rod 56 extended through a corresponding opening in the disc 42.

As can be seen from FIGS. 15A- 15B, each rod is provided with a flywheel 44 which is fixedly connected with the respective rod 43, while the rods 43 are [turnably] turntable mounted in the slots and openings of the discs 41 and 42. When the discs are rotated about their joint axes, the rods 43 are rotated about these axes as well. At the same time, since the flywheel 44 tends to retain its vertical position, it turns each rod 43 with which it is connected around its own axis. Thus, during rotation of the discs, the food product on the rods gradually turns so that each portion of the food product is uniformly heated.

In the embodiment of FIG. 16. the food product supporting means include a grill 45 composed of two grill portions 46 and 47 pivotally connected with one another by a pivot

axle 48. The grill portions 46 and 47 can be opened so as to insert a food product, and then closed so as to enclose the food product in their interior, and then locked by locking means 49 in the closed position.

FIGS. 17A-17E illustrates a container 5 for accommodating wooden chips, as can be seen, the container 5 has an upper wall 50 provided with a plurality of openings 51, a peripheral wall 52 provided with a holding flange 53, and a lower wall 54. The holding flange 53 is provided with means 55 for connecting the container with the housing of the heater located underneath the container, for example, formed as threaded openings for screws and the like.

FIGS. 18A-18C are different plan views, side views and section of the tray for fat collection.

[FIGS. 11A- 11C are a plan view, a side view and a section of a tray 12 with a louver 13for food defrosting of the compact smoking oven.]

[In all embodiments, the housing 1, the compartment 16, the container 5, the door 28, the unit 10-12 are designed as in the embodiment of FIGS. 1-2.]

FIGS. 19-21 show front views and FIGS. 22A and 22B show perspective views of the inventive cooking and smoking [over] oven with different directions of air flow to provide sealing of the oven door.

FIG. 23 show front section of the compact oven, cooking embodiment, which has the food product supporting means include a grate 45 rotatable by motor 15 between the support 22 and the support 37 displaceable in an axial direction for removal food product supporting means 45.

FIG. 24 show front section of the compact oven, cooking embodiment, which has the food product supporting means include a grate 45 rotatable by motor 15 between the support 22 and support 7 with slot for inserting one end of said rod 36 and food product supporting means displaceable in an up direction for removal of the food product.

It will be understood that each of the elements described above, or two or more together, may also find a useful application in other types of constructions differing from the types of constructions differing from the types described above. While the invention has been illustrated and described as embodied in a compact [smoking]oven, it is not intended